(Optional) Laravel Views and Controllers

Building Complete Web Interfaces with Blade Templates

Even though Blade is an important part of Laravel, we don't use Laravel's Blade templates for the REST API server.

Learning Journey So Far

Lesson 1: Routes and Controllers

- URL routing to controller methods
- HTTP verbs (GET, POST, PUT, DELETE)
- Mockup data in controllers

Lesson 2: Models and Controllers

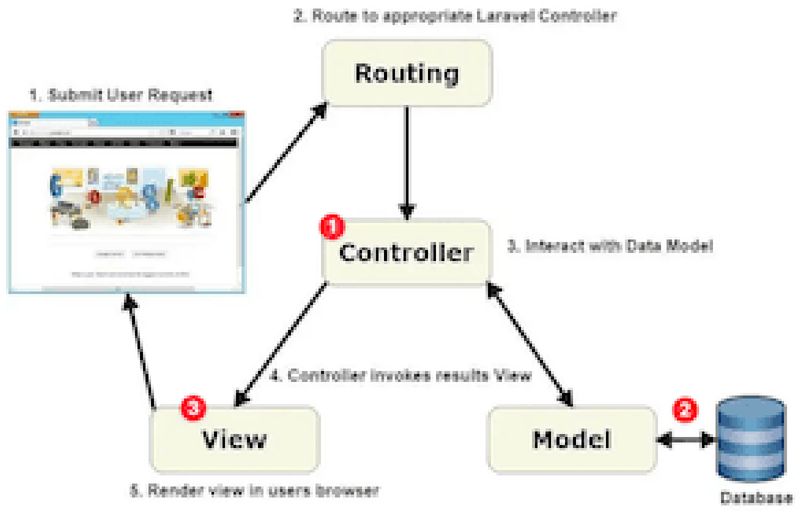
- Database operations with Eloquent
- Real data persistence
- Advanced queries and relationships

Today: Views and Controllers

- Blade templating engine
- HTML presentation layer
- Complete MVC pattern

MVC Pattern: The Complete Picture

```
Request → Routes → (1) Controller → (2) Model → Database
                        ↓              ↑
                   (3) View ←──────────┘
                        ↓
                  HTML Response
```



2. Route to appropriate Laravel Controller
Routing
1. Submit User Request
1
Controller
3. Interact with Data Model
4. Controller invokes results View
3
View
2
Model
Database
5. Render view in users browser

Complete Flow:

1. **Route** receives request
2. **Controller** processes business logic
3. **Model** handles data operations
4. **View** renders HTML presentation
5. **Response** sent to browser

What are Views?

Views = Presentation Layer

```
// Controller handles logic
public function index()
{
    $students = Student::all();              // Get data from Model
    return view('students.index', compact('students')); // Pass to View
}
```

```
<!-- View handles presentation -->
<h1>Student List</h1>
@foreach($students as $student)
    <div>{{ $student->name }} - {{ $student->major }}</div>
@endforeach
```

Views separate logic from presentation!

Laravel Blade Templating Engine

Blade = Laravel's Templating System

- **File Extension**: `.blade.php`
- **Location**: `resources/views/`
- **Features**: Template inheritance, components, directives
- **Security**: Automatic HTML escaping

Blade vs Plain PHP

Plain PHP:

```
<h1><?php echo htmlspecialchars($title); ?></h1>
```

Blade:

```
<h1>{{ $title }}</h1>  <!-- Auto-escaped -->
```

View Directory Structure

```
resources/views/
├── layouts/
│   └── app.blade.php              # Master layout
├── students/
│   ├── index.blade.php            # Student list
│   ├── show.blade.php             # Student details
│   ├── create.blade.php           # Create form
│   └── edit.blade.php             # Edit form
├── partials/
│   ├── header.blade.php           # Reusable header
│   └── footer.blade.php           # Reusable footer
└── welcome.blade.php              # Homepage
```

Organized by feature/resource

Blade Template Inheritance

Layout Inheritance Directives

- `@yield('section')` : Define placeholder in layout
- `@extends('layout')` : Extend a layout
- `@section('name')` : Define section content
- `@endsection` : End section definition

Master Layout **(parent):**

```
<title>@yield('title')</title>
<body>
    @yield('content')
</body>
```

Child View **(extends):**

Blade Directives Explained

Output Directives

```
{{ $student->name }}            <!-- Escaped output (safe) -->
{!! $htmlContent !!}           <!-- Raw output (dangerous) -->
{{ $name ?? 'Unknown' }}       <!-- Default value if null -->
```

Control Flow Directives

```
@if($students->count() > 0)
    <p>Found {{ $students->count() }} students</p>
@else
    <p>No students found</p>
@endif

@foreach($students as $student)
    <div>{{ $student->name }}</div>
@endforeach

@forelse($students as $student)
    <div>{{ $student->name }}</div>
@empty
    <p>No students to display</p>
@endforelse
```

Form Handling in Blade

Important Form Directives

```
<form method="POST" action="{{ route('students.store') }}">
    @csrf                                      <!-- CSRF protection token -->
    @method('PUT')                             <!-- HTTP method spoofing -->

    <!-- Input with validation error styling -->
    <input class="form-control @error('name') is-invalid @enderror"
           name="name"
           value="{{ old('name') }}">    <!-- Keep old input on error -->

    @error('name')                              <!-- Show validation error -->
        <div class="invalid-feedback">{{ $message }}</div>
    @enderror
</form>
```

Key Features

- `@csrf` : Required for all POST/PUT/DELETE forms
- `old('field')` : Preserve input after validation errors
- `@error()` : Display field-specific validation errors

Data Passing to Views

Multiple Ways to Pass Data

```php
// Method 1: compact() helper
public function index()
{
    $students = Student::all();
    $total = $students->count();
    return view('students.index', compact('students', 'total'));
}

// Method 2: Array syntax
public function show(Student $student)
{
    return view('students.show', [
        'student' => $student,
        'isEditable' => true
    ]);
}
```

```php
// Method 3: with() method
public function create()
{
    $majors = ['Computer Science', 'Mathematics', 'Physics'];
    return view('students.create')->with('majors', $majors);
}

// Method 4: Chain multiple with()
public function edit(Student $student)
{
    return view('students.edit')
           ->with('student', $student)
           ->with('title', 'Edit Student');
}
```

Testing Your Views

Manual Testing (Browser)

1. **Start Laravel server**: `php artisan serve`
2. **Visit URLs**:
   - `http://localhost:8000/students` → Student list
   - `http://localhost:8000/students/create` → Create form
   - `http://localhost:8000/students/1` → Student details
   - `http://localhost:8000/students/1/edit` → Edit form

Form Testing:

- Fill out create form → Should redirect to list with success message
- Edit existing student → Should update and show success
- Try invalid data → Should show validation errors